

Notice of Allowability

Application No.

10/676,068

Examiner

Huyen X. Vo

Applicant(s)

HAYRE, HARBHAJAN S.

Art Unit

2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/3/2007.
2. ☒ The allowed claim(s) is/are 1-5,7,8 and 10-13.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-5, 7-8, and 10-13 are allowed over prior art of record. The following is an examiner's statement of reasons for allowance: Hayre et al. (from IDS) disclose the steps of examining speech signal to determine a neurological disease. And the signal processing steps of converting a human subject's spoken words into corresponding electrical signals; amplifying said electrical signals; frequency band limiting, and signal conditioning the said electrical signals to produce modified signals; determining an envelope of said modified signals; determining a spectral density of said modified signals and providing a spectral density signal; smoothing said spectral density signal; and determining a spectral envelope of said smoothed spectral density signal, are well known in the signal processing art. Hayre et al. fail to specifically disclose the steps of determining the presence of a depression in said spectral envelope; determining an amplitude of said depression with reference to an average db level of two shoulder peaks in said spectral density signal on either side of said depression; determining a ratio of said amplitudes of said depression and said average db level of said two shoulder peaks; and using said ratio for identifying and measuring a neurological manifestation in the subject's spoken word, of early phases of neuro disease. Furthermore, it would have not been obvious to one of ordinary skill in the art at the time of invention to modify Hayre et al. in order to obtain the claimed invention. Therefore, claims 1-5, 7-8, and 10-13 are allowed over prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

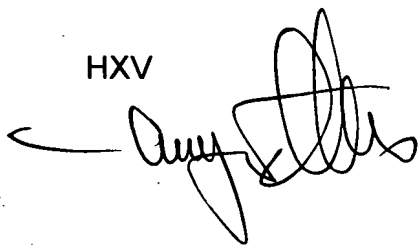
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huyen X. Vo whose telephone number is 571-272-7631. The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HXV

7/8/2007

A handwritten signature in black ink, appearing to read 'Huyen X. Vo', is written over the 'HXV' text.

Abstract of the Disclosure

Noninvasive, remote methods and apparatus for detecting early phases of neuro diseases such as the non-tremor phase of Parkinson's disease, dyskinesia, dyslexia and neuroatrophy, etc., are disclosed. Five words spoken either directly into a microphone connected to a local analysis system or remotely, as by way of a telephone link to a system for analysis of time and frequency domains of speech characteristics are representative of the presence of disease. The method includes the steps of transducing a set of unmodified spoken words or numbers into electrical signals which are bandlimited and amplified. These signals are analyzed in both time and frequency domains to detect and measure the manifestation of neurological disorders in the envelope of the time representation and spectral density of the words. Detection is carried out when the subject's body is in contact with neither a sensor nor an instrument, nor subjected to any other invasive means such as providing body fluids or breath, and without the need to perform any psychomotor functions.

a neuro-normal individual resembles a bell shaped curve, whereas in the case of a person having Parkinson's disease, the envelope is distorted in a very unique manner indicated by a depression in its structure. Such a distortion may resemble the back of a two-humped camel. It is noted, however, that in the case of individuals with severe alcohol or drug damaged brain cells it may not be possible to easily detect these diagnostic parameters.

[013] In accordance with the invention, therefore, detection is carried out when the subject's body is in contact with neither a sensor nor an instrument, nor subjected to any other invasive means such as requiring to provide body fluids or breath, and without the need to perform any psychomotor functions or Magnetic Resonance Imaging scans of brain or imaging thereof.

Brief Description of Drawings

[014] The foregoing, and additional objects, features and advantages of the present invention will become apparent to those of skill in the art from the following detailed description of a preferred embodiment thereof, taken with the accompanying drawings, in which:

Fig. 1 is a graphical illustration of a speech signal time domain, showing time vs. amplitude;

Fig. 2 is a graphical illustration of a speech signal frequency spectrum showing spectral density vs. frequency; and

Figs. 3A and 3B are block diagrams of a neurological impairment

COMBINED DECLARATION AND POWER OF ATTORNEY

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL,
CONTINUATION, OR C-I-P)

As a below named inventor, I hereby declare that:

TYPE OF DECLARATION

This declaration is for an original application.

INVENTORSHIP IDENTIFICATION

My residence, post office address and citizenship are as stated below, next to my name. I believe that I am the original, first and sole inventor of the subject matter that is claimed, and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

Noninvasive Detection Of Neuro Diseases

SPECIFICATION IDENTIFICATION

The specification is attached hereto.

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56, and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent.

measurement apparatus for use in the present invention, Fig. 3A being in situ using a microphone, and Fig. 3B being remote by using a telephone.

Description of Preferred Embodiment

[015] Turning now to a more detailed description of the present invention, a preferred form of the method of the invention includes the steps of transducing a set of words spoken by a subject to be tested into electrical signals, such speech signals producing typical wave patterns, such as those illustrated at 10 in Fig. 1. The signals are amplified, frequency band limited, converted to digital signals, and are Fast Fourier Transformed (FFT) to obtain the frequency spectra of the speech. A typical spectrum is illustrated by waveform 12 in Fig. 2.

[016] The processing of the received and transduced speech signals may be carried out in the neurological disorder detector apparatus 14 illustrated in Figs. 3A and 3B. As illustrated, a microphone 16 (Fig. 3A) such as a Radio Shack model 33-985, or a digital microphone such as that provided by Analog Devices, Inc., or the equivalent, or a telephone 17 (Fig. 3B) is used to transduce spoken words into their corresponding electrical signals which are supplied by way of line 18 to suitable signal processing equipment indicated at 20. Such equipment may be a commercially available personal computer such as a 386DX30 or any newer computers, including suitable audio processing boards.

[017] The processor 20 preferably includes an amplifier 22 for receiving audio signals on line 18 with the amplified signals being applied by way of line 24 to a band

COMBINED DECLARATION AND POWER OF ATTORNEY

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL,
CONTINUATION, OR C-I-P)

As a below named inventor, I hereby declare that:

TYPE OF DECLARATION

This declaration is for an original application.

INVENTORSHIP IDENTIFICATION

My residence, post office address and citizenship are as stated below, next to my name. I believe that I am the original, first and sole inventor of the subject matter that is claimed, and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

Noninvasive Detection Of Neuro Diseases

SPECIFICATION IDENTIFICATION

The specification is attached hereto.

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56, and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent.

POWER OF ATTORNEY

I hereby appoint the following practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

APPOINTED PRACTITIONER(S)	REGISTRATION NUMBER(S)
George M. Cooper	20201
Douglas R. Hanscom	26600
Felix J. D'Ambrosio	25721
Eric S. Spector	22495
William A. Blake	30548
Jennifer P. Yancy	47003
Alexander D. Raring	52502

SEND CORRESPONDENCE TO

George M. Cooper
P. O. Box 2266 Eads Station
Arlington, VA 22202
23294


DIRECT TELEPHONE CALLS TO:

George M. Cooper
703-415-1500

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE(S)


Harb S. Hayre

Inventor's signature

Date

Residence Houston, TX

Post Office Address 10 Legend Ln., Houston, TX 77024-6003


Country of Citizenship US

9/22/03